

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/015890

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl⁷ H04B3/23, H04M1/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl⁷ H04B3/00, H04B7/00, H04M1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2005
Kokai Jitsuyo Shinan Koho 1971-2005 Jitsuyo Shinan Toroku Koho 1996-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	JP 2002-526961 A (HOUSE EAR INSTITUTE), 20 August, 2002 (20.08.02), Particularly, Par. No. [0002], [0058], [0061]; Fig. 7 & WO 00/19605 A2 & AU 9961680 A & EP 1118247 A2	1, 2, 4 5-6
A	JP 10-501951 A (Philips Electronics N.V.), 17 February, 1998 (17.02.98), Particularly, Figs. 2, 4 & WO 96/32776 A2 & KR 97703668 A & US 5768398 A & EP 771515 A1	1, 2, 4-6

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
17 January, 2005 (17.01.05)

Date of mailing of the international search report
01 February, 2005 (01.02.05)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

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PCT/JP2004/015890

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002-094419 A (Toshiba Corp.), 29 March, 2002 (29.03.02), Particularly, Fig. 5 (Family: none)	1, 2, 4-6
A	JP 01-198154 A (Oki Electric Industry Co., Ltd.), 09 August, 1989 (09.08.89), Particularly, Fig. 5 (Family: none)	1, 2, 4-6

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Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 3
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

(See extra sheet)
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

Continuation of Box No.II-2 of continuation of first sheet (2)

Claim 3 includes describes "calculation of an average value of filter coefficients of a predetermined past period as an offset component" and the Description contains a calculation equation (8).

When these descriptions are considered, for each of the M tap coefficients, the average of the tap coefficients for a predetermined past period is calculated (second term in the right side of equation (8)) and the average is subtracted from the tap coefficient so as to obtain a new tap coefficient.

However, when equation (8) is calculated,

each of the tap coefficient $h(k+1, m)$ at time $k+1$ is almost 0, for it is apparent that the impulse response of the unknown transmission path to be applied is assumed to be almost invariable for the time from the technical common sense. The low-frequency offset component treated in the invention of the present application does not change largely for the sampling time interval and accordingly, the average value of the past tap coefficients at an arbitrary (m) is considered to be almost identical to the value of the current tap coefficient.

Consequently, when the equation (8) is calculated, all the tap coefficients are set almost to a value of 0. This apparently disturbs the adaptive operation of the filter.

Therefore, by using the operation expressed by claim 3 and equation (8), it is impossible to achieve the effect to be achieved as an echo canceller and it is impossible to rationally understand the technical meaning of the operation. Thus, claim 3 cannot have novelty or inventive step or usability in industry.